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1 [Decay-usage scheduling in multiprocessors](#)



D. H. J. Epema

November 1998 **ACM Transactions on Computer Systems (TOCS)**, Volume 16 Issue 4

**Publisher:** ACM Press

Full text available: [pdf\(377.13 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Decay-usage scheduling is a priority-aging time-sharing scheduling policy capable of dealing with workload of both interactive and batch jobs by decreasing the priority of a job when it acquires time, and by increasing its priority when it does not use the (a) CPU. In this article we deal with decay-usage scheduling policy in multiprocessors modeled after widely used systems. The priority job consists of a base priority and a time-dependent component based on processor usage. B ..

**Keywords:** control, convergence, decay usage, priorities, shares

2 [An analysis of decay-usage scheduling in multiprocessors](#)



D. H. J. Epema

May 1995 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1995 ACM SIGMETRICS joint international conference on Measurement and modeling of computer systems SIGMETRICS '95/PERFORMANCE '95**, Volume 23 Issue 1

**Publisher:** ACM Press

Full text available: [pdf\(1.13 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Priority-ageing or decay-usage scheduling is a time-sharing scheduling policy capable of dealing with workload of both interactive and batch jobs by decreasing the priority of a job when it acquires time, and by increasing its priority when it does not use the (a) CPU. In this paper we deal with decay-usage scheduling policy in multiprocessor systems modeled after widely used systems. The priority of a job consists of a base priority and a time-dependent part based on processor usage

3 [Multilevel  \$\mu\$ TESLA: Broadcast authentication for distributed sensor networks](#)



Donggang Liu, Peng Ning

November 2004 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 3 Issue 4

**Publisher:** ACM Press

Full text available: [pdf\(410.86 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Broadcast authentication is a fundamental security service in distributed sensor networks. This paper presents the development of a scalable broadcast authentication scheme named *multilevel  $\mu$ TESLA* based on  $\mu$ TESLA, a broadcast authentication protocol whose scalability is limited to unicast-based initial parameter distribution. Multilevel  $\mu$ TESLA satisfies several nice properties, including low overhead, tolerance of message loss, scalability to large networks, and re ...

**Keywords:** Broadcast authentication, TESLA, sensor networks

#### 4 Congestion control for fair resource allocation in networks with multicast flows

Supratim Deb, R. Srikant

April 2004 **IEEE/ACM Transactions on Networking (TON)**, Volume 12 Issue 2

**Publisher:** IEEE Press

Full text available:  pdf(399.82 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#)

We consider the problem of congestion control in networks which support both multirate multicast sessions and unicast sessions. We present a decentralized algorithm which enables the different adaptive receivers in different multicast sessions to adjust their rates to satisfy some fairness criterion. A one-bit ECN marking strategy to be used at the nodes is also proposed. The congestion control mechanism does not require any per-flow state information for unicast flows at the node junction ...

**Keywords:** TCP, congestion control, layered multicast, multirate multicast

#### 5 Concurrency in heavily loaded neighborhood-constrained systems



Valmir C. Barbosa, Eli Gafni

October 1989 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 11 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(1.74 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#)

Let  $G$  be a connected undirected graph in which each node corresponds to a process and two nodes are connected by an edge if the corresponding processes share a resource. We consider distributed computations in which processes are constantly demanding all of their resources in order to operate and in which neighboring processes may not operate concurrently. We advocate that such a system is general enough for representing a large class of resource-sharing systems under heavy load ...

#### 6 Optimizing multidimensional index trees for main memory access



Kihong Kim, Sang K. Cha, Keunjoo Kwon

May 2001 **ACM SIGMOD Record , Proceedings of the 2001 ACM SIGMOD international conference on Management of data SIGMOD '01**, Volume 30 Issue 2

**Publisher:** ACM Press

Full text available:  pdf(243.75 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#)

Recent studies have shown that cache-conscious indexes such as the CSB+-tree outperform conventional main memory indexes such as the T-tree. The key idea of these cache-conscious indexes is to eliminate most of child pointers from a node to increase the fanout of the tree. When the node size is chosen in the order of the cache block size, this pointer elimination effectively reduces the tree height, and thus improves the cache behavior of the index. However, the pointer elimination can be ...

#### 7 Optimal scheduling policies for a class of queues with customer deadlines to the beginning of service



Shivendra S. Panwar, Don Towsley, Jack K. Wolf

October 1988 **Journal of the ACM (JACM)**, Volume 35 Issue 4

**Publisher:** ACM Press

Full text available:  [pdf\(1.03 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#): [review](#)

Many problems can be modeled as single-server queues with impatient customers. An example of the transmission of voice packets over a packet-switched network. If the voice packets do not reach their destination within a certain time interval of their transmission, they are useless to the receiver and considered lost. It is therefore desirable to schedule the customers such that the fraction of customers served within their respective deadlines is maximized. For this measure of performance ...

8 The POSTGRES next generation database management system



Michael Stonebraker, Greg Kemnitz

October 1991 **Communications of the ACM**, Volume 34 Issue 10

**Publisher:** ACM Press

Full text available:  [pdf\(5.74 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** Extended relational database management systems, POSTGRES

9 Parallel and distributed systems (PDS): A cost-oriented approach for infrastructural design



Danilo Ardagna, Chiara Francalanci, Marco Trubian

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing SAC '04**

**Publisher:** ACM Press

Full text available:  [pdf\(186.95 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#):

The selection of a cost-minimizing combination of hardware and network components that satisfy organizational requirements is a complex design problem with multiple degrees of freedom. Decisions must be made on how to distribute the overall computing load onto multiple computers, where to locate computers and how to take advantage of legacy components. The corresponding optimization problem not only embeds the structure of NP-hard problems, but also represents a challenge with a well-structured ...

**Keywords:** cost minimization, tabu-search

10 Progress in logic and arithmetic circuit optimisation: Pre-synthesis optimization of multiplications to improve circuit performance

Rafael Ruiz-Sautua, María C. Molina, José M. Mendías, Román Hermida

March 2006 **Proceedings of the conference on Design, automation and test in Europe: Proceedings DATE '06**

**Publisher:** European Design and Automation Association

Full text available:  [pdf\(287.19 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#)

Conventional high-level synthesis uses the worst case delay to relate all inputs to all outputs of an operation. This is a very conservative approximation of reality, especially in arithmetic operations (where some bits are required later than others and some bits are produced earlier than others); this paper proposes a pre-synthesis optimization algorithm that takes advantage of this feature for an efficient high-level synthesis of data-flow graphs formed by additions and multiplications. The ...


11 On the analytical modeling of database concurrency control



Philip S. Yu, Daniel M. Dias, Stephen S. Lavenberg

September 1993 **Journal of the ACM (JACM)**, Volume 40 Issue 4



**Publisher:** ACM Press

Full text available:  [pdf\(2.75 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#):

The Concurrency Control (CC) scheme employed can profoundly affect the performance of transaction processing systems. In this paper, a simple unified approximate analysis methodology to model effect on system performance of data contention under different CC schemes and for different structures is developed. This paper concentrates on modeling data contention and then, as others have done in other papers, the solutions of the data contention model are coupled with a standard hard ...

**12 Boolean array structures for a rule-based forward chaining inference engine**



 Kenneth Fordyce, Gerald Sullivan  
January 1987 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL in transition APL '87**, Volume 17 Issue 4  
**Publisher:** ACM Press  
Full text available:  pdf(761.90 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**13 Weighted proportional window control of TCP traffic**

James Aweya, Michel Ouellette, Delfin Y. Montuno  
July 2001 **International Journal of Network Management**, Volume 11 Issue 4  
**Publisher:** John Wiley & Sons, Inc.  
Full text available:  pdf(471.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#):

This article describes a technique for weighted proportional window control of elastic traffic such that generated by TCP. This is achieved through the modification of the receiver's advertised window of TCP connections sharing the bottleneck link while taking into account the price that a user of a connection has paid for the service and the total number of active connections sharing bottleneck link. Copyright © 2001 John Wiley & Sons, Ltd.


**14 A decision procedure for term algebras with queues**

 April 2001 **ACM Transactions on Computational Logic (TOCL)**, Volume 2 Issue 2  
**Publisher:** ACM Press  
Full text available:  pdf(232.86 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#):  
[review](#)

In software verification it is often required to prove statements about heterogeneous domains containing elements of various sorts, such as counters, stacks, lists, trees and queues. Any domain with counters, stacks, lists, and trees (but not queues) can be easily seen a special case of the term algebra, and hence a decision procedure for term algebras can be applied to decide the first-order theory of such a domain. We present a quantifier-elimination procedure for the first-order theory

**Keywords:** queues, term algebras, trees, words

**15 Prioritized resource allocation for stressed networks**

Cory C. Beard, Victor S. Frost  
October 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 5  
**Publisher:** IEEE Press  
Full text available:  pdf(253.05 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Overloads that occur during times of network stress result in blocked access to all users, independent of importance. These overloads can occur because of degraded resource availability or abnormally high demand. Public broadband networks must dynamically recognize some multimedia connections having greater importance than others and allocate resources accordingly. A new approach to connection admission control is proposed that uses an upper limit policy to optimize the admission of connections ...

**Keywords:** Computer network performance, resource management

# 16 Partial redundancy elimination in SSA form

 Robert Kennedy, Sun Chan, Shin-Ming Liu, Raymond Lo, Peng Tu, Fred Chow  
May 1999 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 2

**Publisher:** ACM Press

Full text available:  [pdf\(704.71 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#)

The SSAPRE algorithm for performing partial redundancy elimination based entirely on SSA form is presented. The algorithm is formulated based on a new conceptual framework, the factored redundancy graph, for analyzing redundancy, and represents the first sparse approach to the classical problem and on methods for its solution. With the algorithm description, theorems and proofs are given showing that the algorithm produces the best possible code by the criteria of computational optimality ...

**Keywords:** code motion, common subexpressions, data flow analysis, partial redundancy, static single assignment form

# 17 A prototype implementation of the SQL Ada module extension (SAME) method

 Allison LeClair, Susan Phillips  
December 1990 **Proceedings of the conference on TRI-ADA '90 TRI-Ada '90**

**Publisher:** ACM Press

Full text available:  [pdf\(1.20 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

As Ada becomes more widespread, the ability to access commercial database technologies through Ada systems becomes a significant issue. Researchers throughout our industry are investigating interface approaches between Ada and these technologies, including language bindings between Ada and SQL, a relational database language. This paper presents a recent implementation of one such binding—the SQL Ada Module Extension (SAME) method.

# 18 When do bounds and domain propagation lead to the same search space?

 Christian Schulte, Peter J. Stuckey  
May 2005 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 2

**Publisher:** ACM Press

Full text available:  [pdf\(380.67 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This article explores the question of when two propagation-based constraint systems have the same behavior, in terms of search space. We categorize the behavior of domain and bounds propagation for primitive constraints, and provide theorems that allow us to determine propagation behaviors for conjunctions of constraints. We then show how we can use this to analyze CLP(FD) programs to determine when we can safely replace domain propagators by more efficient bounds propagators without increasing ...

**Keywords:** Constraint (logic) programming, abstract interpretation, bounds propagation, domain propagation, finite domain constraints, program analysis

# 19 When are two workflows the same?

Jan Hidders, Marlon Dumas, Wil M. P. van der Aalst, Arthur H. M. ter Hofstede, Jan Verelst  
January 2005 **Proceedings of the 2005 Australasian symposium on Theory of computing - Volume 41 CATS '05**

**Publisher:** Australian Computer Society, Inc.

Full text available:  [pdf\(236.54 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index term](#)

In the area of workflow management, one is confronted with a large number of competing languages

and the relations between them (e.g. relative expressiveness) are usually not clear. Moreover, within the same language it is generally possible to express the same workflow in different way: feature known as variability. This paper aims at providing some of the formal groundwork for st relative expressiveness and variability by defining notions of equivalence capturing different vie

20 Featured column: Is CS1 better with the same lecture and lab instructor?



Renée McCauley, Christopher Starr, Walter Pharr, RoxAnn Stalvey, George Pothering  
June 2006 **ACM SIGCSE Bulletin**, Volume 38 Issue 2

**Publisher:** ACM Press

Full text available: pdf(357.66 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents results from a four-semester classroom experiment to assess whether the introductory programming lecture and closed-laboratory courses would be more effective if they taught by the same or different instructors. Using a common final exam and lab practical as dependent variables, we determined there is no statistically significant effect on learning outcon having the same instructor for lecture and lab. Results of a qualitative survey, however, showed statistically ...

**Keywords:** CS1, closed-laboratories, computer science education research, instructional design

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